# TEACHING STUDENTS TO CHART

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The chart as a means of expression is being used so extensively today that no one can afford to be ignorant of its various forms. In business it is used to tell the story of the rise and fall of sales, of the routing of the product through the factory, and of numerous other phases of commerce and industry. In magazines and books it is used to indicate complex relationships more definitely and accurately than by lengthy descriptions.

A chart may be defined as a graphic presentation of relationships. For example, a chart of the variations in the rate of exchange of the English pound shows the relationship of the value of the pound at one time to that at other periods.

Business firms and writers use various forms of charts frequently because they are thus able to set forth certain relationships much more simply, definitely, concisely, and forcibly than by the unaided use of words. Of course, charts usually require some explanation. This may often be brief, and sometimes a short tabular key suffices. When the idea back of a chart is grasped, one can in almost a single glance obtain an understanding of the relationship presented.

"Because I need to keep myself posted up to the minute is one reason why I am today relying more than ever on graphic representations of conditions in our business and outside," a nationally known business man said recently.

Since charts are being used so widely and form such a valuable means of expression, it is advisable that instruction regarding their interpretation and construction be given students in secondary schools. This was the conclusion reached by Captain L. M. Bittinger, principal of the Onarga Military School, after some discussion of the matter at faculty meetings.

The first of many questions to be answered was, How much time must be devoted to the study of graphical representation in

order that the students may be able to use and interpret charts readily? An investigation revealed the fact that a study of the use, value, interpretation, and construction of the six most important kinds of charts could be covered in five class periods of forty-five minutes each.

The next problem was to determine how the study of charts could best be introduced to the students. It was decided to include the week's study of charts in one of the established courses. The two branches of study which were naturally presented for consideration were mathematics and English. There is, obviously enough, a mathematical element in all charts. Yet the chart exists solely as a means of expression and is almost always an adjunct to written or spoken discourse. The purpose of the chart is to make certain ideas more clear and emphatic. For these reasons it was decided that the science of charting should be introduced in the English classes of this school.

Could this new subject be taught best to Freshmen, Sophomores, Juniors, or Seniors? As the study of charts was to be taught for the first time, there was no reason why it could not be given to each of the four classes. This was done, and it was found that the Freshmen obtained as thorough a grasp of the subject as the more advanced students.

The instruction was begun by pointing out to the students the value and the prevalence of the use of charts. Numerous articles from magazines, especially those devoted to business, were found to reinforce these points. The use of charts in general were then shown, and their adaptability to certain specific situations indicated. Then the study of the interpretation and construction of the six most important types of charts began.

The first type of chart studied is the simplest, the most obvious, and the most familiar—the graph. One of the chief values of this type of chart is that it brings out the element of time more effectively than any of the other kinds of charts. It is used extensively in business to chart the fluctuations of sales, of the various divisions of costs, and of many other phases of commerce. Statistics dealing with such things as immigration records, growth of cities, and coal production are readily assimilated and understood when charted

in this way. The construction of charts of this class may easily be taught by having the students graph their grades in a certain course.

The second type considered was the circular diagram. It consists of a circle, divided into sectors. Each sector represents a certain part of a unit, and the size of the sector depends upon the ratio of the part it represents to the whole. If the numerical percentage is written on the sector, the relation of the parts tc each other and to the whole is made evident. An example of a chart of this kind is one showing the percentage of immigrants to America from Ireland, Italy, Germany, and other foreign countries, in which the percentages are noted on sectors of proportionate sizes.

This type of chart is also frequently used where it is desirable to bring out forcefully the ratio of parts to each other and to the whole. It shows mass and proportion better than any of the other charts. For practice in constructing such charts, the students will find ample material in almost any of their school studies. For example, in connection with the study of physiology, the students may chart the percentage of carbohydrates, fats, and other elements in certain foods.

The next general class of charts may be called the relative-size charts. These consist of pictures drawn to scale. A familiar example of this class is a chart showing the size relationships between the navies of nations. This is done by means of pictures drawn in dimensions proportionate to the sizes of the navies. This type of chart emphasizes the quantitative relationship between the items under consideration.

Another simple yet useful chart included in the brief course described is the geographical, or map, chart. This chart is useful in showing density in certain localities or place relationships. Advertising departments of newspapers and magazines use it frequently to indicate distribution. It consists of a map on which relative densities are shown by means of dots or shaded areas. Most students are already familiar with charts of this type, as they have used them in studying geography to show the corn belt, the wheat-producing areas, the distribution of the population of the United States, and the like.

For indicating the progress of competing units, the picture chart was introduced. The students may construct various kinds of picture charts to show the average grades of the classes in school, the standings of baseball teams, or any other relationship in which there is an element of competition.

The picture chart is interesting and always attracts attention. It is valuable in that it presents an emotional as well as a logical appeal. During the Liberty Loan campaigns picture charts were used effectively to indicate the progress of local teams in reaching their quota.

The last type is the diagrammatic chart. This chart is valuable in showing the exact relationships between the co-ordinate and ranking units of an organization or system. It is capable of an infinite number of variations and is readily adaptable to almost any situation.

Charts are really simple, obvious modes of expression and are easily understood. If a few examples of each of the six main types are drawn upon a blackboard and explained, the students will experience but little difficulty in constructing other charts which are similar, and yet original.

By learning to chart, students are helped in three ways: They become able to interpret charts; they become familiar with a new means of expression; and they develop their analytical powers.